

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1-63 (canceled)

64 (previously presented): A system for detecting a macromolecular analyte comprising:

a removably insertable rigid and structurally self-supporting probe having a sample presenting surface for presenting the macromolecular analyte to a laser desorption ionization energy source that emits energy capable of desorbing and ionizing the macromolecular analyte from the probe, wherein at least the surface comprises a non-metallic material selected from the group consisting of polystyrene, polypropylene, polyethylene, polycarbonate, nylon, starch, agarose, and dextran;

a laser desorption ionization energy source that directs laser energy to the sample presenting surface of the probe for desorbing and ionizing the macromolecular analyte;

a spectrometer tube;

a vacuum means for applying a vacuum to the interior of said tube;

electrical potential means within the tube for applying an accelerating electrical potential to the desorbed and ionized analyte;

a detector in communication with the probe surface that detects the desorbed macromolecular analyte; and

means for detecting the mass of the ions by their time of flight.

65-85 (canceled).

86 (previously presented): A method for detecting a macromolecular analyte comprising the steps of:

a) providing a system comprising:

4 (1) a removably insertable rigid and structurally self-supporting probe
5 having a sample presenting surface for presenting the macromolecular analyte to a laser
6 desorption ionization energy source that emits energy capable of desorbing and ionizing the
7 macromolecular analyte from the probe, wherein at least the surface comprises a non-metallic
8 material selected from the group consisting of polystyrene, polypropylene, polyethylene,
9 polycarbonate, nylon, starch, agarose, and dextran, wherein the macromolecular analyte is
10 presented on the probe surface;

11 (2) a laser desorption ionization energy source that directs laser energy
12 to the sample presenting surface of the probe for desorbing and ionizing the macromolecular
13 analyte;

14 (3) a spectrometer tube;

15 (4) a vacuum means for applying a vacuum to the interior of said tube;

16 (5) electrical potential means within the tube for applying an
17 accelerating electrical potential to the desorbed and ionized analyte;

18 (6) a detector in communication with the probe surface that detects the
19 desorbed and ionized macromolecular analyte; and

20 (7) means for detecting the mass of the ions by their time of flight;

21 b) desorbing and ionizing at least a portion of the macromolecular analyte
22 from the surface by exposing the macromolecular analyte to energy from the laser desorption
23 ionization energy source;

24 c) accelerating the desorbed and ionized analyte toward the detector;

25 d) detecting the desorbed and ionized macromolecular analyte with the
26 detector; and

27 e) detecting the mass of the ions by their time of flight.

87 (canceled)

1 88 (previously presented): The method of claim 86 further comprising before
2 step (b) the step of modifying the macromolecular analyte chemically or enzymatically while
3 deposited on the probe surface.

1 89 (previously presented): The method of claim 86 further comprising after step
2 (c) the steps of:

3 d) modifying the macromolecular analyte chemically or enzymatically while
4 deposited on the probe surface; and

5 e) repeating steps b) and c).

1 90 (previously presented): The method of claim 86 wherein the probe surface
2 comprises an array of locations, each location having at least one macromolecular analyte
3 deposited thereon; and step (b) comprises desorbing and ionizing a first macromolecular analyte
4 from a first location in the array;

5 and wherein the method further comprises the step of:

6 d) desorbing and ionizing a second macromolecular analyte from a second
7 location in the array; and

8 e) detecting the desorbed and ionized second macromolecular analyte with
9 the detector.

91-100 (canceled)

1 101 (previously presented): The method of claim 86 wherein the
2 macromolecular analyte comprises a protein or a peptide.

102-107 (canceled)

1 108 (previously presented): The system of claim 64, wherein the
2 macromolecular analyte is a biomolecule.

1 109 (previously presented): The system of claim 64, wherein the
2 macromolecular analyte is a biomolecule from an undifferentiated sample.

1 110 (previously presented): The system of claim 64, wherein the
2 macromolecular analyte is a protein or a peptide.

1 111 (previously presented): The method of claim 86, wherein the
2 macromolecular analyte is a biomolecule.

1 112 (previously presented): The method of claim 86, wherein the
2 macromolecular analyte is a biomolecule from an undifferentiated sample.

1 113 (previously presented): The method of claim 86, wherein the
2 macromolecular analyte is a protein or a peptide.

114-120 (canceled)

1 121 (previously presented): The system of claim 64, wherein the
2 macromolecular analyte is a nucleic acid.

1 122 (previously presented): The system of claim 64, wherein the
2 macromolecular analyte is a carbohydrate.

1 123 (previously presented): The method of claim 86, wherein the
2 macromolecular analyte is a nucleic acid.

1 124 (previously presented): The method of claim 86, wherein the
2 macromolecular analyte is a carbohydrate.

1 125 (canceled)

1 126 (previously presented): The system of any of claims 64 or 137-141 further
2 comprising applying to the macromolecular analyte a matrix material for promoting desorption
3 and ionization of the macromolecular analyte on the surface.

1 127 (previously presented): The method of any of claims 86, 88-90, 101, 111-
2 113, 123, 124 or 144-148 further comprising applying to the macromolecular analyte a matrix
3 material for promoting desorption and ionization of the macromolecular analyte on the surface.

128-136 (canceled)

1 137 (previously presented): The system of claim 64 wherein the non-metallic
2 material is polystyrene.

1 138 (previously presented): The system of claim 64 wherein the non-metallic
2 material is polypropylene.

1 139 (previously presented): The system of claim 64 wherein the non-metallic
2 material is polycarbonate.

1 140 (previously presented): The system of claim 64 wherein the non-metallic
2 material is nylon.

1 (previously presented): The system of claim 64 wherein the non-metallic
2 material is dextran.

142-143 (canceled)

1 144 (previously presented): The method of claim 86 wherein the non-metallic
2 material is polystyrene.

1 145 (previously presented): The method of claim 86 wherein the non-metallic
2 material is polypropylene.

1 146 (previously presented): The method of claim 86 wherein the non-metallic
2 material is polycarbonate.

1 147 (previously presented): The method of claim 86 wherein the non-metallic
2 material is nylon.

Appl. No. 09/123,253
Amdt. dated July 12, 2005
Reply to Office Action of April 12, 2005

PATENT

148 (previously presented): The method of claim 86 wherein the non-metallic material is dextran.